REVISED TMDL IMPLEMENTATION PLAN
FOR
WALNUT CREEK / STONE CREEK WATERSHED

SEDIMENT (BIOTA IMPACTED)
in
LITTLE CHEHAW CREEK AND ROCK CREEK
JONES COUNTY, GEORGIA
&
WALNUT CREEK
JONES AND BIBB COUNTIES, GEORGIA

FECAL COLIFORM
in
WALNUT CREEK
JONES AND BIBB COUNTIES, GEORGIA
&
OCMULGEE RIVER
BIBB AND TWIGGS COUNTIES, GEORGIA

Developed by

Middle Georgia Regional Development Center

in coordination with the

Walnut Creek / Stone Creek Advisory Committee

April 30, 2003

Walnut Creek / Stone Creek Watershed
Revised TMDL Implementation Plan

Overview

The stream segments under study are:

- Little Chehaw Creek, Jones County
- Rock Creek, Jones County
- Walnut Creek, Jones and Bibb counties
- Ocmulgee River, Bibb and Twiggs counties

(Please see attached map.) Different stream segments will be covered separately throughout the document as each are impacted by different water quality standards.

Plan Preparation….All Creeks

The revised implementation plan for the Walnut Creek/Stone Creek Watershed was developed by the Middle Georgia Regional Development Center (RDC) in conjunction with the Walnut Creek/Stone Creek Advisory Committee. This committee included, but was not limited to, stakeholder representatives from the forestry industry, agriculture, the Georgia Forestry Commission, the Georgia Soil and Water Conservation Commission, the University of Georgia, the poultry industry, the Department of Natural Resources, a County Manager, county staff, Ocmulgee RiverKeeper representatives, interested private citizens, Macon Water Authority representatives and property owners who owned 10 acres or more of property contiguous to the affected stream segments. The Middle Georgia RDC was under Georgia Environmental Protection Division (EPD) contract to prepare a TMDL implementation plan.

The Committee met over a series of three meetings to formulate the revised implementation plan. The first meeting and public hearing held on February 25, 2003 at the Jones County Government Center and was primarily informational in nature (see attached agenda and accompanying minutes). An EPD representative was on hand to give a brief overview of the TMDL process and address some of the more technical aspects of TMDLs. The EPD brochure entitled "Watershed Wisdom – Georgia's TMDL Program" was distributed to attendees. The video of the same title was shown as well. There were 10 persons who attended and participated in this first meeting (see attached sign-in sheet.)

The second meeting was held on March 17, 2003 at the Middle Georgia Regional Development Center offices in Macon (see attached agenda and accompanying minutes). In addition, a press release (see attached press release) was sent to the local papers to better inform the general public. There were 14 persons who attended and participated in this second meeting (see attached sign-in sheet.) Public comments were solicited and input was used to create the draft revised implementation plan.

The third and final meeting was held on April 21, 2003 at the Middle Georgia Regional Development Center offices in Macon to allow the committee to make final comments on the draft revised implementation plan before final submittal to EPD (see attached agenda and accompanying minutes.) There were fifteen representatives who attended and participated in this third meeting (see attached sign-in sheet.) A reporter from the *Macon Telegraph* attended the final meeting and wrote a follow-up article that further served to spread the word about the committee's activities (see attached article from the April 23, 2003 *Macon Telegraph*).

Education/Outreach Activities (All Streams)

There were several possible education and outreach activities identified by the stakeholders through the three meetings:

- The Ocmulgee Riverkeeper organization will disseminate information regarding affected streams during a 2003 Earthday event and other festivals, possibly in conjunction with Keep Macon/Bibb Clean and Beautiful;
- Press Releases have been distributed as part of the TMDL implementation planning effort;
- Macon Water Authority will issue press releases concerning Capacity, Management, Operations, and Maintenance program (CMOM) efforts, as discussed further below;
- Possible institution of an Adopt a Stream program(s) by the Ocmulgee Riverkeeper organization;
- Macon Water Authority to sponsor additional educational curricula in local schools; and
- Press Releases on Department of Community Affairs' Ocmulgee River Assessment Report

TMDL Data Overview… Biota (Sediment)

The Biota Impacted designation indicates that studies have shown a modification of the biological community, more specifically, fish. In 1990, 1998, and 1999, the Department of Natural Resources (DNR) Wildlife Resources Division (WRD) conducted studies of fish populations. WRD used the Index of Biotic Integrity (IBI) and modified Index of Well-Being (IWB) to identify affected fish populations. Stream segments with fish populations rated as Poor or Very Poor were included in the Partially Supporting list. The cause of low IBI scores in the lack of fish habitat is presumably due to stream sedimentation. To determine the relationship between the in-stream water quality and the source loadings, each watershed was modeled. The analysis performed to develop sediment TMDLs for the 303(d) listed watersheds utilized the Universal Soil Loss Equation (USLE), which predicts the average annual soil loss caused by erosion.

A sustainable aquatic ecosystem requires a healthy habitat. A major disturbance to stream habitats is erosion and sedimentation. Through a source assessment analysis, non-point sources were considered to be most responsible for the elevated sediment loads in Little Deer Creek and its Tributary. Non-point sources of sediment are diffuse sources that cannot be identified as entering the water body at a single location. These sources generally involve land use activities that contribute sediment to streams during a rainfall runoff event. Eroded soils from forests, cropland, mining sites, and other land can be transported to Georgia streams through runoff. Excessive sediment that reaches the water bodies can cause several changes to the stream. It can make the streams shallower or wider, affecting the stream's temperature, dissolved oxygen, flow rate and velocity. It can affect the ability of the stream to assimilate pollutants. It can change the diversity of the fish populations and other biological communities. As sediment is carried into the stream, it can change the stream bottom and smother sensitive organisms.

Background….Little Chehaw Creek

The impacted segment of Little Chehaw Creek consists of its entire three mile length from its headwaters to where it terminates into Chehaw Creek, and is located entirely in Jones County. Little Chehaw Creek is currently on the 303(d) list in the State of Georgia for violating the water

quality standards for Biota (Sediment). The water use classification for Little Chehaw Creek is fishing and it is found to be partially supporting this designated use.

This segment was tested on November 8, 1999, September 28, 1999 and on May 13, 1999. Some comments from the Biomonitoring report for Little Chehaw Creek include:

> "Habitat scores indicate a high rate of sediment disposition. Poor instream cover, highly embedded bottom substrates, and poor macroinvertebrate habitat reflect the high sediment load. Water quality values indicate urban/suburban runoff. Residential activities in the riparian zone and surrounding watershed may be a source of urban runoff. Low species diversity and disproportional fish community reflect a highly impacted site."

Comments from the 305(b) report when the Little Chehaw Creek segment was first listed include:

> "Cause of Impairment - Habitat degradation is a result from sedimentation. The most productive macroinvertebrate habitat, riffle, is completely absent. The habitat assessment indicates that 80-90% of the stream bottom is affected with heavy deposition of fine materials, 80% embeddedness by sediment and silt, and 50-60% of the banks are eroded."
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> "Source of Impairment – Approximately 50% of the land use in the area is agri-grazing, 30% is silviculture, 15% is forested, and 5% is residential. A dairy farm upstream has a pond that drains into this creek. Runoff from road crossings and severe bank erosion are all contributing factors."
>
> "Watershed Observations – Dairy farm along right edge of water with a pond that drains into the creek. Along with that pond, there are five other ponds, all upstream. The dairy farm uses the retention pond to field spray a 50-acre area. Silviculture observed along Dye Road and Wheeler Road."

Little Chehaw Creek has been determined to have a current sediment load of 1,991 tons a year. The Wasteload Allocation (WLA) assigned by the State to the Tributary for certain point sources allows for 0 tons of sediment. Little Chehaw Creek has an assigned Load Allocation of 1,048 tons/yr, which when added to the WLA of 0 tons/yr, produces an approximate Total Load target of 1,048 tons/yr. As stated above, Little Chehaw Creek's current sediment load has been determined to be 1,991 tons/yr, and therefore it would require a 47.4 percent reduction in sediment load to reach what is considered an acceptable limit for allowable pollutant loading.

Contrary to the land uses reported in the 305(b) report, the Biota TMDL states that land use percentages of note surrounding Little Chehaw Creek include 72.4 percent forest uses, 8.08 percent "Pasture/Hay," and 12.7 percent "Row Crops." EPD has determined that 92.3 percent of the total sediment load originates from "Row Crops," 3.7 percent from "Roads," and 2.5% from "Pasture/Hay" for Little Chehaw Creek.

Background….Rock Creek

The impacted segment of Rock Creek is for a portion one mile upstream of Lite n Tie Road, located entirely in Jones County. Rock Creek is currently on the 303(d) list in the State of Georgia for violating the water quality standards for Biota (Sediment). The water use classification for Rock Creek is fishing and it is found to be partially supporting this designated use.

This segment was tested at least once on September 9, 1998. Some comments from the Biomonitoring report for Rock Creek include:

> "The high proportion of pioneer species at this site indicates unfavorable conditions for a balanced fish community. Elevated conductivity values, high turbidity, and a grayish tint to the water reflect point source impacts from an upstream mine. The high sediment load is in part due to the discharges from the mine and surrounding silviculture. Rapid water level changes and unstable banks are likely the result of high volume water releases."

Rock Creek has been determined to have a current sediment load of 1,909 tons a year. The Wasteload Allocation (WLA) assigned by the State to Rock Creek for certain point sources allows for 90 tons of sediment. Rock Creek has an assigned Load Allocation of 368 tons/yr, which when added to the WLA of 90 tons/yr, produces an approximate Total Load target of 458 tons/yr. As stated above RockCreek's current sediment load has been determined to be 1,909 tons/yr, and therefore it would require a 76 percent reduction in sediment load to reach what is considered an acceptable limit for allowable pollutant loading.

Land use percentages of note surrounding Rock Creek include 68.9 percent forest uses, 10.6 percent "Quarries, Strip Mines, Gravel Pits," and 9.7 percent "Row Crops." EPD has determined that 55.4 percent of the total sediment load originates from "Quarries, Strip Mines, Gravel Pits" and 43 percent from "Row Crops" for Rock Creek.

These land use percentages were strongly disputed by property owners along Rock Creek. For instance, none of the property owners present at the meetings felt that almost ten percent of the land use was "Row Crops," and emphatically disagreed with the assessment that 43 percent of the sediment load came from "Row Crops." The property owners were very vocal in their assessment that Rinker Materials Corporation (formerly known as Southern Aggregates) was overwhelmingly responsible for the high sediment load in Rock Creek.

In the TMDL documents, EPD has allowed that the sediment load estimates for Rock Creek are high. EPD reports that this is due to the high C factor used in the USLE for quarries, strip mines, and gravel pits, and thus the large contribution of sediment (55.4 percent). Rinker Materials Corp. (Southern Aggregates) mines granite from its quarry in the vicinity of Rock Creek. EPD reports that the sediment load from stone and gravel mines is typically low. In the TMDL document, EPD states that the C factor used in the USLE for stone quarries was too high and thus, sediment load was overestimated.

The Walnut Creek/Stone Creek Advisory group disagreed with the EPD methodology at arriving at the total sediment loading for the Rinker Materials Corporation operations on Rock Creek.

Additionally, that the contribution of sediment by the Rinker Materials Corp. (Southern Aggregates) mine could be overestimated was denounced by members of the Walnut Creek/Stone Creek Advisory group. Property owners along Rock Creek believed that if anything, the 55.4 percent of sediment contribution by the mine is greatly underestimated.

Background….Walnut Creek

The impacted segment of Walnut Creek consists of its entire 20 mile length from its headwaters to where it terminates into the Ocmulgee River, and is located in both Jones and Bibb counties. Walnut Creek is currently on the 303(d) list in the State of Georgia for violating the water quality standards for both Biota (Sediment) and Fecal Coliform. The water use classification for Walnut Creek is fishing and it is found to be not supporting this designated use.

This segment was tested at two separate points: Walnut Creek at McKay Road and Walnut Creek at Emery Highway in Macon. Testing dates are recorded monthly throughout 2000, including over 19 separate testings at each site. Some comments from the Biomonitoring report for Walnut Creek include:

> "Habitat scores indicate this site is highly impacted by a high rate of sediment disposition. Suburban development and agriculture and silviculture activities in the surrounding watershed may be a source of sediment. Elevated water quality values were also recorded. Two know point source discharges and extensive development in the watershed may provide sources of urban/suburban impacts to the site."

Comments from the 305(b) report when the Walnut Creek segment was first listed include:

> "Cause of Impairment - Habitat degradation from sedimentation. The habitat assessment indicates that 80-90% of the stream bottom is affected with heavy deposition of fine materials, 90% embeddedness by sediment and silt, and 60-70% of the banks are eroded."
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> "Source of Impairment – Approximately 20% of the land use in the area is silviculture, 15% is agric-grazing, and 15% is agric-cropland. A dairy farm upstream has a pond that drains into this creek. Runoff from road crossings and severe bank erosion are also contributing factors."
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> "Watershed Observations – Silviculture and agri-grazing are exhibited off of Giles Road. In the Northwest area of the watershed, hayfields and cattle are present off of Blue Ridge School Road. Dirt roads are widespread throughout the southern portion of the watershed."

Walnut Creek has been determined to have a current sediment load of 12,951 tons a year. The Wasteload Allocation (WLA) assigned by the State to Walnut Creek for certain point sources allows for 0 tons of sediment. Walnut Creek has an assigned Load Allocation of 10,551 tons/yr, which when added to the WLA of 0 tons/yr, produces an approximate Total Load target of

10,551 tons/yr. As stated above, Walnut Creek's current sediment load has been determined to be 12,951 tons/yr, and therefore it would require an 18.5 percent reduction in sediment load to reach what is considered an acceptable limit for allowable pollutant loading.

Confirming the observations of land uses reported in the 305(b) report, the Biota TMDL states that land use percentages of note surrounding Walnut Creek include 78.41 percent forest uses, 8.26 percent "Pasture/Hay," and 7.69 percent "Row Crops." EPD has determined that 86.9 percent of the total sediment load originates from "Row Crops," 7.9 percent from "Roads," and 3.2% from "Pasture/Hay" for Walnut Creek.

Committee members also disputed the land use percentages provided by EPD for Walnut Creek, citing higher urban usages, particularly as the stream approached Macon.

Possible Pollutant Sources…

There were several possible sources contributing to the sediment impairment that were identified by the stakeholders through the three meetings:

Little Chehaw Creek: Possible Sources of Sedimentation

- Loosened soil particles from **unpaved roadways** carried away from the roadway, ditch and road bank by water, wind, or traffic;
- **Development** on Wheeler Road with disturbed earth, and silt fencing that is not maintained.

Rock Creek: Possible Sources of Sedimentation

- Southern Aggregates **Mining** Operation (also known as Rinker Materials Corporation), directly into the stream from overburden, runoff, and "blowoff."

Walnut Creek: Possible Sources of Sedimentation

- **Urban Runoff** and the velocity of stormwater runoff;
- Runoff originating from **development** on Graham Road; and
- "**Legacy Sediment**." Over the last century, there has been a dramatic decrease in the amount of land farmed in Georgia. Since 1950, there has been a 57 percent reduction in farmland. With the reduction in farmland, there has also been a decrease in the amount of soil erosion. This suggests that the sedimentation observed in the impaired stream segments may be legacy sediment resulting from past land use practices.

Regulatory and Voluntary Measures: Existing and Future… Little Chehaw Creek, Rock Creek, and Walnut Creek

In addition to a host of federal and state laws administered by various agencies, there are a number of important local regulatory and voluntary actions, both existing and proposed, that may help to address the possible sources noted above. They are:

- Jones County has an adopted soil and erosion control ordinance, where developers of land disturbing activities greater than 1.1 acres must submit a SES plan for review by Jones County and the NRCS. This will help to address loading sources

that may originate from commercial and residential development. Jones County is responsible for providing enforcement and compliance. Members called for better enforcement of SES laws by the County, particularly with respect to development along Wheeler Road.

- Bibb County has an adopted soil and erosion control ordinance. All plans are supposed to be reviewed by Soil and Water Conservation District, although Bibb County reviews all plans by deferral where developers of land disturbing activities greater than 1.1 acres must submit a SES plan for review by Bibb County. This will help to address loading sources that may originate from commercial and residential development. Bibb County is responsible for providing enforcement and compliance. Members called for better enforcement of SES laws by the County, particularly with respect to Walnut Creek.
- Jones County will entertain the possibility of adopting BMPs for unpaved road maintenance in 2004 that may assist with decreasing the amount of sediment load originating from unpaved roads only in immediate proximity to creek and stream crossings. This may include the utilization of the publication entitled Recommended Practices Manual, A Guideline for Maintenance and Service of Unpaved Roads as a guide in maintaining unpaved roads and roadside ditches.
- Jones County is seeking to establish a Greenspace Program that will advise the County on targeting general and specific areas to designate as greenspace, which may include acquisition of easements that can serve as buffers along streams to help dilute runoff and dovetail it with passive recreation. Over 25% of the County land area is located within the Piedmont National Wildlife Refuge.
- Jones and Bibb counties intend to adopt the Part V Environmental Criteria as mandated by the Georgia Growth Planning Act during their next Comprehensive Plan updates in 2005 and 2007, respectively. This will establish standards and procedures pertaining to the protection of river corridors, mountain tops, water supply, watersheds/reservoirs, groundwater recharge areas, and wetlands. The stakeholder committee suggested that the local governments not wait until the comprehensive plans are due to adopt these criteria.
- Various partners will participate in public education measures, beginning with the TMDL Implementation Plan and continuing into the future through the use of Best Management Practices.
- The committee suggested that Bibb and Jones counties review their existing land use ordinances to ensure that they effectively act to limit stormwater velocity and its effects.
- The implementation of an Adopt-A-Stream program was also recommended. The program could be utilized by both Bibb and Jones counties through various organizations and groups throughout the watershed. The program could provide updates on current stream conditions in the future as the requisite funding and support are developed. The Ocmulgee Riverkeeper organization is an excellent grass roots effort that can help this program gain momentum.
- Rinker Materials Corp (also known as Southern Aggregates) Mine issue: After extended discussions of the Rock Creek issues at all of three (3) of the TMDL meetings, the Advisory Committee concluded that a series of specific actions are required to address the conditions that exist with respect to Rock Creek, a short,

discrete stream having only a single major soil disturbance activity occurring within its drain area. These measures are as follows:

1. " Georgia EPD and other governmental agencies should enforce current permit conditions applicable to Southern Aggregates to decrease sedimentation discharge, since, according to EPD, Southern Aggregates has, on occasion, exceeded the permit parameters.
2. Georgia EPD and other governmental agencies should conduct a review of the Southern Aggregates permit conditions and parameters as soon as possible to determine if those permit conditions and parameters are appropriate to control sedimentation of Rock Creek in view of the test results that EPD obtained for Rock Creek.
3. In order to lower the amount of sedimentation of Rock Creek to acceptable limits, Georgia EPD and other appropriate governmental agencies should decrease the sedimentation discharge limits applicable to Southern Aggregates, and change other permit parameters applicable to Southern Aggregates, including, taking the following action:
    a) Limit amount of runoff permissible from overburden and/or soils stored on the Southern Aggregates site;
    b) Require Southern Aggregates to protect the integrity of the overburden and/or soil materials stored on the Southern Aggregates site against water and wind erosion, including the requirement of stabilization of the overburden and mined materials stored at the site;
    c) Limit the amount of airborne particulates permitted with respect to the mining activity conducted at the Southern Aggregates site;
    d) Limit the amount of water (i.e., the flow volumes) that Southern Aggregates can discharge from its site (including the containment ponds) at one time as well as during the set period (e.g., 24 hours, 48 hours, etc.).
    e) Decrease the sedimentation parameters of the water discharges from the Southern Aggregates site (including the containment ponds).
    f) Require that Southern Aggregates allow the community access to the site for purposes of monitoring the soil sedimentation issues, including allowing the community to independently test the water discharged from the contaminant pond;
    g) Require that Southern Aggregates obtain community input to develop a sedimentation management plan that addresses all types possible sources of sedimentation of Rock Creek from the site, including but not limited to:
        i. A soil stabilization plan that addresses all soil erosion at the site, irrespective of whether caused by wind or water.
        ii. A plan to control the timing and amounts of discharges that Southern Aggregates makes into Rock Creek.
4. Work with state and local governmental agencies to source funds to conduct additional testing of Rock Creek, with a view to:

a) Determining the extent of the biological degradation of Rock Creek;
b) Confirming the amount of sedimentation entering Rock Creek from the Southern Aggregates site; and
c) Developing a comprehensive management plan to address the source of the sedimentation."

Schedule for Implementation…
Little Chehaw Creek, Rock Creek, and Walnut Creek

The following will be tentatively initiated and continued past 2003:

- Jones and Bibb counties will continue to enforce their Soil and Erosion Control Ordinances; and
- Various public education measures by organizations and groups throughout the watershed; and
- EPD, either state or regional office, should take action on the Rinker Materials Corp. (Southern Aggregates Mine) management measures listed above.

The following will be tentatively initiated and continued past 2004:

- Jones County will entertain the adoption of BMPs for unpaved road maintenance in areas in immediate proximity to creek and stream crossings.
- Possible Adopt-A-Stream Program established in either or both counties.

The following will be tentatively initiated and continued past 2005:

- Jones and Bibb counties will adopt Part V Environmental Criteria as part of their Comprehensive Plan update, although committee members strongly encouraged that these Criteria be adopted earlier, if possible.

Monitoring Plan… Little Chehaw Creek, Rock Creek, and Walnut Creek

Future monitoring for these streams will include the following:

- Department of Natural Resources-Environmental Protection Division – The "Stream Team" is scheduled to conduct more testing in the Ocmulgee River Basin in 2004.

Criteria to Determine Substantial Progress…
Little Chehaw Creek, Rock Creek, and Walnut Creek

- Adoption by Jones and Bibb counties of Part V Environmental Ordinances;
- Adoption by Jones County of BMPs for unpaved road practices in immediate proximity to creek and stream crossings;
- Continued enforcement of SES ordinances by Jones and Bibb counties;
- Creation of Cooperative Monitoring Program by various partners;
- Creation of Adopt-A-Stream Program by various partners;
- Rinker Materials Corp. (Southern Aggregates) Mine issue:

- EPD Site inspection and review of effectiveness of permit conditions (see Item 1 & 2 under Management Measures above);
- In light of findings, EPD to alter permit conditions, including:
    a. limiting quantity of runoff (3a above);
    b. requiring stabilization of the overburden and mined materials (3b);
    c. limiting the amount of airborne particulates (3c);
    d. improving the quality of runoff and quantity of water emanating from the site into Rock Creek (3d & 3e);
    e. allowing access for testing on the mine property (3f);
    f. development of a sedimentation plan for the mine with public input that addresses soil stabilization and discharges (3g);
- Rinker Materials Corp. undertakes additional dust control measures; and
- EPD to assist in identifying and securing additional future funds to assist with testing (Item 4 above);

Funding Sources… Little Chehaw Creek, Rock Creek, and Walnut Creek

- **Georgia Quality Growth Program:** State of Georgia and Jones County - Jones County is applying for a Georgia Department of Community Affairs' Quality Growth Program Grant to develop a passive recreation plan which will include the identification of possible greenspace properties. Some of these properties may include buffers and corridors along existing streams, which may lead to their eventual purchase and protection of those streams.

- **US EPA Section 604(b) funds** - Federal grant funds administered by the Department of Natural Resources for the State of Georgia. Part of these funds allow regional development centers to perform further development of plans to study water quality problems, perform watershed evaluations, conduct strategic monitoring, and characterize pollution sources for 303(d) streams.

- **US EPA Watershed Surveys and Planning Program - Small Watershed Program** – This program provides planning assistance to local agencies for the development of coordinated water and related land resources programs in watersheds and river basins.

Conclusion… Little Chehaw Creek, Rock Creek, and Walnut Creek

Additional and more accurate data on actual sources of sediment loads to these three stream segments will go far to helping partners to better define and more directly address the problems. The committee felt strongly that Rinker Materials Corp. (formerly known as Southern Aggregates) is overwhelmingly responsible for the elevated sediment levels in Rock Creek. Additionally, with respect to the creeks other than Rock Creek, it is unknown how large an impact legacy sediment is contributing to the elevated sediment levels. In the meantime, there are real steps that can be taken by state and local partners to possibly arrest the amount of sediment load going into both streams, if not to outright lower it. These include more regulation and proactive measures such as greenspace planning by local partners. Additional public education can only serve to increase public awareness and lend credibility to the process.

Background….Ocmulgee River

The impacted segment of the Ocmulgee River runs from the mouth of Tobesofkee Creek seven miles south to the mouth of Echeconnee Creek. The segment constitutes the border between southeastern Bibb and southwestern Twiggs Counties and is within the Upper Ocmulgee River Basin. This ten-mile segment of the Ocmulgee River is currently on the 303(d) list in the State of Georgia for violating the water quality standard for Fecal Coliform. The water use classification this segment of the Ocmulgee River is fishing and it is found to be partially supporting this designated use.

Land use percentages of note surrounding this Ocmulgee River segment include 80.6 percent forest uses, and 8.1 percent "Pasture/Hay."

TMDL Data… Ocmulgee River

Georgia EPD tested samples from Ocmulgee River from January to December of 2000 to detect the level of fecal coliform at Warner Robins (six miles due south of Tobesofkee Creek.) For the months of May through October, fecal coliform should not exceed a geometric mean of 200 counts per 100ml on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours. In the months of November through April, fecal coliform should not exceed a geometric mean of 1000 counts per 100ml, based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours, and not to exceed a maximum of 4,000 counts per 100ml for any sample. The data gathered indicated four exceedances of the fecal coliform level during the May through October testing, with a geometric mean standard of 306 counts per 100ml. Additionally, there was one exceedance of the fecal coliform level during the November through April testing, although the geometric mean standard of 1000 counts per 100ml for the period was below acceptable levels. In 2000, the seven-mile segment of the Ocmulgee River was placed on the 303(d) list. Georgia EPD is recommending a 90 percent reduction in fecal coliform bacteria in the Ocmulgee River in this stream segment to reach acceptable water quality levels.

Background….Walnut Creek

The impacted segment of Walnut Creek is its entire twenty-mile length from its headwaters to where it terminates into the Ocmulgee River, and is located in both Jones and Bibb counties. Walnut Creek is currently on the 303(d) list in the State of Georgia for violating the water quality standards for both Biota (Sediment) and Fecal Coliform. The water use classification for Walnut Creek is fishing and it is found to be not supporting this designated use.

TMDL Data… Walnut Creek

Georgia EPD tested samples from Walnut Creek from January to December of 1999 to detect the level of fecal coliform at Emery Highway in Macon, Georgia. For the months of May through October, fecal coliform should not exceed a geometric mean of 200 counts per 100ml on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours. In the months of November through April, fecal coliform should not exceed a geometric mean of 1000 counts per 100ml, based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours, and not to exceed a

maximum of 4,000 counts per 100ml for any sample. The data gathered indicated four exceedances of the fecal coliform level during the May through October testing, with geometric mean standard of 330 counts per 100ml. Additionally, there was three exceedance of the fecal coliform level during the November through April testing, with a geometric mean standard of 1149 counts per 100ml. In 2000, the twenty-mile segment of the Walnut Creek was placed on the 303(d) list. Georgia EPD is recommending a 99 percent reduction in fecal coliform bacteria in Walnut Creek to reach acceptable water quality levels.

TMDL Data… Fecal Coliform

The presence of fecal coliform bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of man or other animals. At the time this occurred, the source water might have been contaminated by pathogens or disease producing bacteria or viruses, which can also exist in fecal material. Some waterborne pathogenic diseases include typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. Fecal coliform bacteria may occur in ambient water as a result of the overflow of domestic sewage or non-point sources of human and animal waste.

Non-point sources of fecal coliform bacteria are diffuse sources that cannot be identified as entering a waterbody through a discrete conveyance at a single location. These sources, generally, but not always, involve accumulation of fecal coliform bacteria on land surfaces and washoff as a result of storm events.

Possible Pollutant Sources… Walnut Creek and Ocmulgee River

Stakeholders made an effort to identify possible sources that could be responsible for high fecal coliform levels through the three meetings:

Walnut Creek: Possible Sources of Fecal Coliform

- Macon Water Authority **Sewer System** (although MWA maintains that through testing, higher levels of fecal coliform are already present in Walnut Creek prior to reaching the MWA area of impact)**;**
- **Urban Runoff** from cities of Macon and Gray;
- **Failing septic systems** from houses located in and above the identified stream segment;
- **Dairy/Cattle Farms**;
- **Wildlife** sources, such as feral hogs and deer;
- **Discarding of animal carcasses** by hunters from bridges;
- Unlined **municipal landfills;** and
- Unlined and improperly used **Construction landfills.**

Ocmulgee River: Possible Sources of Fecal Coliform

- **Sanitary Sewer Overflows** and leaks;
- **Failing septic systems** along and above Tobesofkee; and
- **Dairy/cattle operations** in the watershed as well.
- Unlined **municipal landfills;**

- **Discarding of animal carcasses** by hunters from bridges;
- Unlined and improperly used **Construction landfills;**
- **Wildlife** sources, such as feral hogs and deer;
- **Urban runoff** from Macon; and
- **Discarding of animal carcasses** by hunters from bridges**.**

Regulatory and Voluntary Measures: Walnut Creek and Ocmulgee River

In addition to a host of federal and state laws administered by various agencies, there are a number of important local regulatory and voluntary actions, both existing and proposed, that may help to address the possible sources noted above. They include:

- The Jones and Bibb County Health Departments will continue to review locations and plans for septic tank installation to ensure state regulations are being met in their respective jurisdictions. On-site inspections of new septic tanks will be continued to ensure proper installation. Bibb County also checks where there is any problem with septic tanks, mandates and specifies repairs, and where public sewer is available – connection is mandated. Follow inspections are provided by the Bibb County;
- Jones County will continue to enforce its Solid Waste Ordinance to eliminate illegal dumping in county streams and waterways;
- Bibb County is preparing a new solid waste ordinance that will provide for greater enforcement through an Environmental Enforcement Officer, a new position created in 2003 for the county;
- Jones and Bibb counties intend to adopt the Part V Environmental Criteria as mandated by the Georgia Growth Planning Act during their next Comprehensive Plan update in 2005 and 2007. This will establish standards and procedures pertaining to the protection of river corridors, mountain tops, water supply, watersheds/reservoirs, groundwater recharge areas, and wetlands. The committee recommended that both counties adopt these ordinances ahead of the deadline;
- Various partners will participate in public education measures, beginning with the TMDL Implementation Plan;
- The implementation of an Adopt-A-Stream program was also recommended. The program could be utilized through various organizations and groups throughout the watershed. The program could provide updates on current stream conditions in the future as the requisite funding and support are developed;
- The Macon Water Authority is developing the C.M.O.M. (Capacity, Management, Operations, and Maintenance program, where the actual physical state of the system will be assessed and reported to EPA later this spring. This effort will also include a stream-monitoring program. There will be funds allocated for additional upgrades of the collection system. Walnut Creek will be the first basin that will undergo intensive surveying of water and sewer lines;
- The committee recommended that Bibb and Jones counties, and the cities of Macon, Payne City, and Gray, examine existing land use ordinances to determine their effectiveness at limiting the velocity and negative impacts of urban stormwater runoff;
- Cooperation with local dairy farmers in following grazing BMPs; and
- Possible city and/or county testing to better identify sources of urban runoff.

Schedule for Implementation… Walnut Creek and Ocmulgee River

The following will be tentatively initiated and continued past 2003:

- Jones County will continue to enforce Solid Waste Ordinance Ordinance;
- Various public education measures;
- Jones County Health Department to continue review of septic tank siting and installation;
- Bibb County Health Department to continue review of septic tank siting and installation; and
- Jones County to undertake additional testing to more accurately assess the problem.

The following will be tentatively initiated and continued past 2004:

- Possible Adopt-A-Stream Program established by the Ocmulgee Riverkeeper organization.

The following will be tentatively initiated and continued past 2005:

- Jones County will adopt Part V Environmental Criteria as part of their Comprehensive Plan update in 2005. The committee suggested these criteria be adopted as soon as possible; and
- Bibb County will adopt Part V Environmental Criteria as part of their Comprehensive Plan update in 2007. The committee suggested these criteria be adopted as soon as possible.

Monitoring Plan…Walnut Creek

Further monitoring of the fecal coliform concentrations at the current as well as additional monitoring stations in Walnut Creek is needed to better characterize sources of fecal coliform bacteria and document future reduction of loading. Jones County proposes to sample Walnut Creek at different locations along the segment during 2003 using EPD's testing protocol in an attempt to better define the sources contributing to the high fecal coliform readings. The Macon Water Authority will continue to monitor fecal levels both in and above their service area, in order to better determine possible sources.

Criteria to Determine Substantial Progress… Walnut Creek and Ocmulgee River

- Continued monitoring of stream segments by Jones County. Should monitoring reveal similar fecal coliform bacteria levels, Jones County may ask EPD to reconsider the TMDL thresholds for wildlife, as there seems little other explanation for source of pollutants.
- Adoption by Jones County of Part V Environmental Ordinances;
- Adoption by Bibb County of Part V Environmental Ordinances;
- Continued enforcement of Solid Waste ordinance by Jones County;
- Enforcement of newly created Bibb County solid waste ordinance; and
- Creation of Adopt-A-Stream Program by various partners;

Funding Sources… Walnut Creek and Ocmulgee River

- **Jones County General Fund:** Jones County proposes to pursue additional testing. Proposed amounts to be committed include $1,500 for testing and $300 for additional public education.

- **US EPA Section 604(b) funds** - Federal grant funds administered by the Department of Natural Resources for the State of Georgia. Part of these funds allow regional development centers to perform further development of plans to study water quality problems, perform watershed evaluations, conduct strategic monitoring, and characterize pollution sources for 303(d) streams.

- **US EPA Watershed Surveys and Planning Program - Small Watershed Program** – This program provides planning assistance to local agencies for the development of coordinated water and related land resources programs in watersheds and river basins.

Conclusion… Walnut Creek and Ocmulgee River

As both stream segments are relatively near urban areas, stakeholders suspected urban runoff as being a potential source for higher fecal coliform readings. This is quite probable with higher densities of development than some of the more rural areas, although difficult to confirm. The Macon Water Authority (MWA) readily admits and reports spills and leaking sewer pipes, which can add to higher fecal levels. However, MWA officials do not feel that the amount of their contributions are solely responsible for the total fecal load reported well downstream. For their part, MWA is undertaking a comprehensive efficiency study that will seek to minimize overflows into area streams. Stakeholders suspected that failing septic systems along both affected streams were also contributing to the high readings.

Stakeholders also questioned the use of single monitoring stations for the collection of fecal coliform data for Walnut Creek and the Ocmulgee River, citing that additional stations and data may better reflect actual conditions throughout both stream segments and more readily help identify the actual issues.

Local officials are concerned about the relative health of Walnut Creek and are willing to commit local resources towards additional testing and public education.

Additional Comments:

Members of the stakeholder committee also shared concerns over existing fish consumption advisories governing mercury and PCBs in the Ocmulgee River. Committee members cited Georgia Power as one of the largest emitters of mercury in the United States. Committee members were concerned with public health and that a more proactive effort on behalf of the state or local government should be made to make subsistence fishermen aware of the dangers of consuming fish from the river. Committee members stated the desire for EPD to perform additional testing for metals in area streams.

STATE OF GEORGIA
REVISED

TMDL IMPLEMENTATION PLAN
WATERSHED APPROACH
Ocmulgee River Basin

Local Watershed Governments

Middle Georgia RDC
Jones County
Bibb County
Twiggs County
City of Payne City
City of Macon

TMDL Implementation Plans are platforms for establishing a course of actions to restore the quality of impaired water bodies in a watershed. They are intended as a continuing process that may be revised as new conditions and information warrant. Procedures will be developed to track and evaluate the implementation of the management practices and activities identified in the plans. Once restored, appropriate management practices and activities will be continued to maintain the water bodies. **With input from appropriate stakeholder groups, a TMDL Implementation Plan has been developed for a cluster of impaired streams and the corresponding pollutants.** The impaired streams are located in the same sub-basin identified by a HUC10 code (Figure 1).

This Implementation Plan addresses an action plan, education/outreach activities, stakeholders, pollutant sources, and potential funding sources affecting the sub-basin. In addition, the Plan describes (a) regulatory and voluntary practices/control actions (*management measures*) to reduce target pollutants, (b) milestone schedules to show the development of the management measures (*measurable milestones*), (c) a monitoring plan to determine the efficiency of the management measures and measurable milestones, and (d) criteria to determine whether substantial progress is being made towards reducing pollutants in impaired waterbodies. The overall goal of the Plan is to define a set of actions that will help achieve water quality standards in the state of Georgia. Following this section is information regarding individual segments.

Walnut Creek/Stone Creek Watershed
0307010316

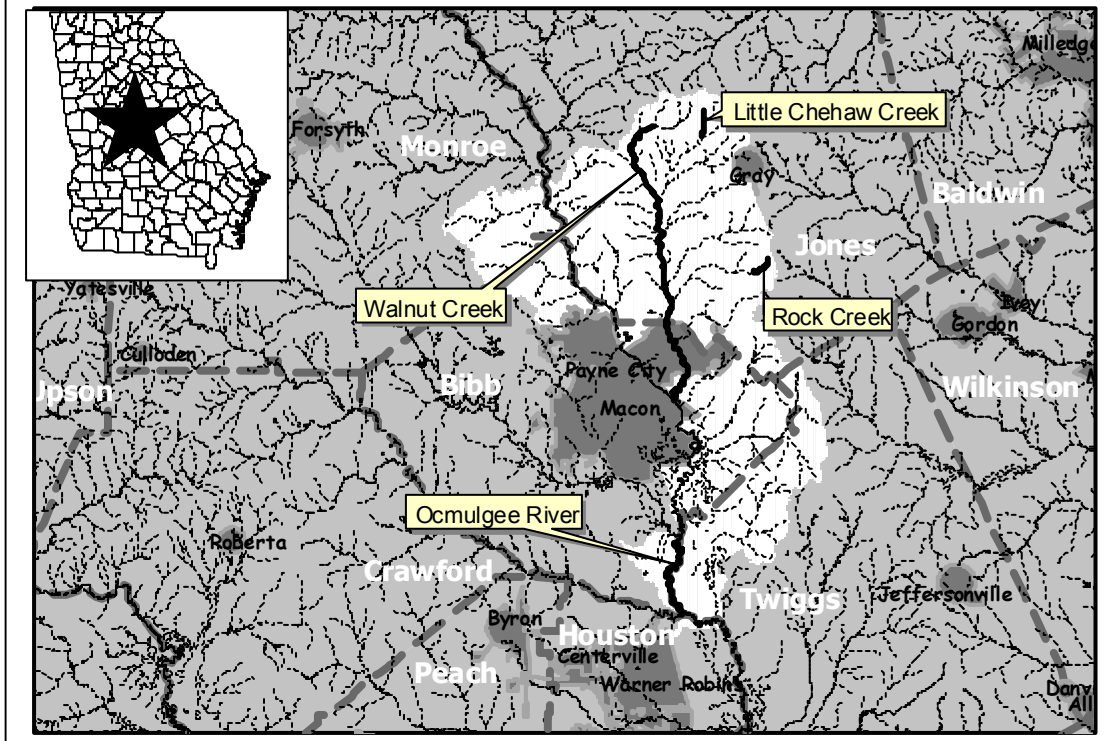


FIGURE 1

Impaired Waterbody*	Impaired Stream Location	Impairment
1. Little Chehaw Creek	Headwaters to Chehaw Creek	Bio(sediment)
2. Ocmulgee River	Tobesofkee Creek to Echeconnee Creek	Fecal Coliform
3. Rock Creek	Upstream Lite-Ntie Road	Bio(sediment)
4. Walnut Creek	Headwaters to Ocmulgee River	Bio(sediment), Fecal Coliform

*These Waterbody Numbers are referenced throughout the Implementation Plan.

Walnut Creek/Stone Creek Watershed
0307010316

Action Plan for Walnut Creek/Stone Creek Watershed

POLLUTANT:	SOURCE:	EFFECT:	WHAT CAN I DO?	
			At Home: Community, School	At Work: Business, Government
__ Dissolved Oxygen (DO) X Fecal Coliform (FC) X Sediment __ Metals __ Fish Consumption Guidelines (FCG) __ Other (Please List)	X Industrial X Urban __ Agriculture __ Forestry __ Residential X Other (Please List) Mining, Wildlife, Dirt Rds., Legacy Sed., Runoff, Landfills	X Habitat __ Recreation __ Drinking Water __ Aesthetics __ Other (Please List)	• Regular Maintenance of Septic Tanks • Start or participate in an Adopt-A-Stream program • Keep eyes open for sources of sediment runoff – e.g. poor soil erosion prevention practices in nearby development • Learning more about erosion/sedimentation • Cease mowing stream buffers • Keep eyes open that existing riparian buffers are left undisturbed	• If involved in agriculture, follow related BMPs • If involved in contracting/development, follow local Soil and Erosion Sedimentation laws • If involved with unpaved road maintenance, adopting relevant BMPs

INFORMATION/EDUCATION/OUTREACH ACTIVITIES

An education/outreach component will be used to enhance public understanding of and participation in implementing the TMDL Implementation Plan.
List of all previous and planned information/education/outreach activities.

Responsible Organization Or Entity	Description	Impacted Waterbodies*	Target Audience	Anticipated Dates (MM/YY)
Advisory Committee	Public information about all watershed creeks	All Creeks	County & Region residents	04/03
Ocmulgee RiverKeeper	Through local events and festivals by Ocmulgee Riverkeeper & Macon/Bibb Clean and Beautiful	All Creeks	County & Region residents	12/03
Macon Water Authority	Macon Water Authority press releases and school curricula as part of "CMOM" effort	Walnut Creek & Ocmulgee River	County & Region residents	06/04
Dept. of Community Affairs	Public education on DCA Ocmulgee River Assessment	All Creeks	County & Region residents	01/04
Ocmulgee RiverKeeper	Establish Adopt-A-Stream programs in Bibb & Jones counties	All Creeks	County & Region residents	12/05

STAKEHOLDERS

EPD encourages public involvement and the active participation of stakeholders in the process of improving water quality. Stakeholders can provide valuable information and data regarding their community and the impaired water bodies and can provide insight and/or implement management measures.

List of local governments, agricultural organizations or significant landholders, commercial forestry organizations, businesses and industries, and local organizations including environmental groups and individuals with a major interest in this watershed.

Name/Organization	Address	City	State	Zip	Phone	E-Mail
Raymond Lisey	124 Whitehead Road	Gray	GA	31032		
Joe Bryant	112 Whitehead Road	Gray	GA	31032		
State of Georgia	205 Butler Street, SE Suite 1252	Atlanta	GA	30334		
TPL	1447 Peachtree Street, NE Suite 601	Atlanta	GA	30307		
Magnolia McClendon	Route 3, Box 262 Feagin Road	Macon	GA	31216-9801		
Joe E. Timberlake	555 N. Rivoli Farms Drive	Macon	GA	31210		
William Quick	9100 Patricia Drive	Macon	GA	31206		
Don Wilson Reed	9568 McCarrell Drive	Macon	GA	31206-7916		
Glenn Barton, Administrator Twiggs County	P. O. Box 202	Jeffersonville	GA	31044		
Ray Bennett, Chairman Twiggs County Commission	P. O. Box 202	Jeffersonville	GA	31044		
Bradley W. Dan, et al	P. O. Box 1408	Savannah	GA	31402		
WOD Timber Company	P. O. Box 1403	Macon	GA	31202		
L. C. Phillips	16999 Highway 129 Route 4, 1700	Macon	GA	31217		
Stephanie Ethel Parker	3241 Rilman Drive, NW	Atlanta	GA	30327		
Lisa Blanks Morkan	128 Old Farm Road	Moultrie	GA	31768-8528		
Clara B. Roberts	2525 Graham Road	Gray	GA	31032		
Winburn Stewart, Jr.	P. O. Box 3789	Macon	GA	31032		
Christine Hammock	2332 Graham Road	Gray	GA	31032		
James Childs, Sr.	185 N. Steelbridge Road	Eatonton	GA	31024		
Lee Andrew Vogt	P. O. Box 10	Gray	GA	31032-0010		
James J. Barron, III	P. O. Box 787	Gray	GA	31032		
McGlamry Properties	108 Olympia Drive #201	Warner Robins	GA	31093		
Fred M. Hasty	355 Cotton Avenue	Macon	GA	31201		
Skeet Lumpkin	2298 Old Clinton Road	Macon	GA	31211	(706) 342-1315	
Mei Hseum Lai	2240 Gray Highway	Macon	GA	31211-1040		
Martha M. Stewart	2075 Old Clinton Road	Macon	GA	31211		
First American	3160 Ridge Avenue	Macon	GA	31204	(478) 994-9239	pchristo@forsythcable.com
Macon Shop Space	1080 Silver Bluff Road	Aiken	SC	29803		
David Bennett, Dep. Ex. Dir. GA Soil & Water Conservation Comm.	P. O. Box 8024	Athens	GA	30603		
Dennis Brooks NRCS, USDA Service Center	205 East Jeffersonville	Madison	GA	30650	(706) 342-1315	
Ben Brown, Supervisor Piedmont Soil & Water Conservation Dis.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		

Grady Calvert, Supervisor Piedmont Soil & Water Conservation Dis.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		
Dean Cates, Agemcy Mgr. Jones County Farm Bureau	Highway 129 N.	Gray	GA	31032		
Ralph Crumley, Sup.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		
Joe Duckworth Cattlemen's Association	299 Barrows Ferry Road	Milledgeville	GA	31061		
Brent Dykes Ga. Soil & Water Cons. Comm.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061	(478) 445-5766	bdykes@gaswcc.org
Ken Sheets, Bibb County Interim Engineer	780 Third Street	Macon	GA	31201-3282		
Mike Giles Georgia Poultry Federation	P. O. Box 763	Gainesville	GA	30503	(770) 532-0473	mike@gapf.org
John Grimes, Supervisor Piedmont Soil & Water Conservation Dis.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		
Jim Ham	P. O. Box 255	Smarr	GA	31086	(478) 994-0589	javham@aol.com
Deron King, City Administrator City of Forsyth	P. O. Box 1447	Forsyth	GA	31029		
Gail King Monroe County Clerk	P. O. Box 189	Forsyth	GA	31029		
Nathan Klaus GA DNR - Nongame Wildlife	116 Rum Creek Drive	Forsyth	GA	31029	(478) 994-1438	naklaus@mindspring.com
Dana Lynch, Agent Monroe Co. Coop. Ext. Service	90 Martin Luther King Drive	Forsyth	GA	31029		
Drew Marczak The Timber Company	P. O. Box 1069	Watkinsville	GA	30677		
Abit Massey, President GA Poultry Federation	Box 763	Gainesville	GA	30503		
Bill Meaks Poultry Science Dept.	University of Georgia	Athens	GA	30602	(706) 542-9182	bmeaks@UGA.edu
William J. Moore	355 Monticello Highway	Gray	GA	31032		
Don Morse, Prgm. Dev. Coor. UGA Coop. Ext. Service	1109 Experiment Street Flynt Building, Room 227	Griffin	GA	30223-1797		
John Niederhofer Water Resources Branch-GA EPD	4220 International Pkwy., Suite 101	Atlanta	GA	30354	(404) 675-1654	j_niederhofer@dnr.state.ga.us
Tommy Olmstead, Chrm. Bibb County Commission	P. O. Box 4708	Macon	GA	31208-4708		
Jim Peters Monroe County Commissioner	475 Blue Ridge School Road	Forsyth	GA	31029	(478) 994-9689	jmpl@mindspring.com
David Pitts, Sup. Piedmont Soil & Water Conservation Dis.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		
Mark Risse, Ext. Eng.` UGA Coop. Ext. Serv.	Driftmier Engineer Building The University of Georgia	Athens	GA	30602		
Tony Rojas, Director Macon Water Authority	P. O. Box 108	Macon	GA	31202-0108		
Frank Sears Jones Co. Coop. Ext. Service	P. O. Box 400	Gray	GA	31032		
William Segars State Water Quality Eng. College of Agriculture/Envir. Sciences	University of Georgia Plant Sciences Building	Athens	GA	30602		
Ronnie Shell, Refuge Mgr. Piedmont National Wildlife Refuge	718 Juliette Road	Round Oak	GA	31038	(478) 986-5441	piedmont@fws.gov
Robert Shulstead Asst. Dean & Coordinator College of Agriculture/Envir. Sciences	University of Georgia Conner Hall	Athens	GA	30602		

Leon Smith	977 Edge Road	Forsyth	GA	31029	(478) 994-5834	
J. Benjamin Spear, Jr.	543 Spear Road	Forsyth	GA	31029	(478) 994-5442	
Wayne Tankersley, Dis. Agent UGA Coop. Ext. Service	1109 Experiment Street Flynt Building, Room 227	Griffin	GA	30223-1797		
Mike Tanner, Chief Ranger GA Forestry Commission	2692 Highway 441 S.	Milledgeville	GA	31061		
David Thompson Calges, Inc.	P. O. Box 570	Forsyth	GA	31029	(478) 994-5156	CagleFarmInc.@aol.com
Joe Thornton	676 North Cross Road	Gray	GA	31032		
Bobby Underwood Agency Manager Monroe County Farm Bureau	433 North Frontage Road	Forsyth	GA	31029		
Melvin Waldrop, CAO	P. O. Box 247	Macon	GA	31202		
Larry Walker Weyerhauser Company	P. O. Box 238	Oglethorpe	GA	31068	(478) 472-5269	Larry.Walker @Weyerhaeuser.com
Clay Washburn Jones County Administrator	P. O. Box 1359	Gray	GA	31032	(478) 986-6405	jonescty@alltel.net
Elizabeth Watts	50 Mays Street	Forsyth	GA	31029	(478) 994-6688	
Harold West GA Forestry Commission	119 Highway 49	Milledgeville	GA	31061	(478) 445-5164	hwest@gfc.state.ga.us
Tiffany Wharton Env. Code Enforcement	P. O. Box 1359	Gray	GA	31032	(478) 986-6084	jcclean@mylink.net
Dexter White Public Works Department	P. O. Box 247	Macon	GA	31202		
Wayne Williams, Pres. GA Cattlemen's Association	1473 Hunting Club Road	Crawfordville	GA	30631		
John Wilson Ocmulgee Riverkeeper	2340 Clayton Street	Macon	GA	31204		
Tom Wooten, Chief Ranger GA Forestry Commission	302 Milledgeville Road	Eatonton	GA	31024		
Mark Wyzalek Macon Water Authority	P. O. Box 108	Macon	GA	31202-0108		
Heather Duncan Macon Telegraph	P. O. Box 4167	Macon	GA	31208	(478) 744-4225	hduncan@macontel.com

WATER BODIES/STREAMS COVERED IN THIS PLAN:

These impaired streams are located in the same sub-basin identified by a HUC10 code. Most of the information contained in this section comes from the 303(d) list and has been completed by employees of the EPD Water Protection Branch. Data that placed stream on 303(d) list will be provided upon request.

Waterbody Name #1	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Little Chehaw Creek	Headwaters to Chehaw Creek	3	Fishing	PS

Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)
Jones			Nonpoint

Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Bio(sediment)	NA	47.4%		January 2002

Waterbody Name #2	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Ocmulgee River	Tobesofkee Creek to Ocheconnee Creek	7	Fishing	PS

Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)
Bibb	Twiggs		Nonpoint

Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Fecal Coliform	1000/100 ml (geometric mean Nov. – April) 200/100 ml (geometric mean May – Oct.)	90%		February 2002

Waterbody Name #3	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Rock Creek	Upstream Lite –N Tie Road	1	Fishing	PS

Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)
Jones			Nonpoint

Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Bio(sediment)	NA	76%		January 2002

Waterbody Name #3	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Walnut Creek	Headwaters to Ocmulgee River	20	Fishing	NS

Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)
Jones Bibb			Nonpoint

Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Fecal Coliform	1000/100 ml (geometric mean Nov. – April) 200/100 ml (geometric mean May – Oct.)	99%		February 2002
Bio(sediment)	NA	18.5%		January 2002

Walnut Creek/Stone Creek Watershed
0307010316

POLLUTANT SOURCES

It is important to recognize the potential source(s) causing water quality impairment. Each source must be controlled to comply with target TMDL/Load Allocations for each pollutant. Included is a description of how the sources contribute to the impairment and the waterbody that is impaired.

List of major nonpoint source categories and sub-categories or individual sources (Urban Runoff, Agriculture, Forestry, Municipal Sewage Treatment Plant)

Pollutant	Sources of Pollutants	Description of Contribution To Impairment	Impacted Waterbodies*
Fecal Coliform	Wildlife	Deposits feces onto land surfaces where it can be transported during storm events to nearby streams, illegal dumping of animal viscera.	Ocmulgee River & Walnut Creek
Fecal Coliform	Failing Septic Systems	Houses in Bibb and Jones counties, above and within the identified stream segments, could have failing septic systems	Ocmulgee River & Walnut Creek
Fecal Coliform	Sanitary Sewer System Overflows	The Macon Water Authority (MWA) contributes to fecal loading from system overflows and leaks.	Ocmulgee River & Walnut Creek
Fecal Coliform	Urban Runoff	Urban Runoff from the cities of Macon and Gray	Ocmulgee River & Walnut Creek
Fecal Coliform	Dairy/Cattle Operations	Runoff from dairy and cattle operations in watershed contributing to stream impairment	Ocmulgee River & Walnut Creek.
Fecal Coliform	Landfills	Unlined and misused construction and municipal landfills leachate contributing to stream impairment	Ocmulgee River & Walnut Creek.
(Bio) Sediment	Rinker Materials Corp. (Southern Aggregates mine)	Addition of sediment load to stream from runoff and blowoff from overburden from quarry operations, also from periodic discharge of settling pond sediment	Rock Creek
(Bio) Sediment	Unpaved Roads	Loosened soil particles from unpaved roadways carried away from the roadway, ditch, and road bank by water, wind, or traffic	Little Chehaw Creek
(Bio) Sediment	Commercial and Residential Development	Neglected silt fence and related structures allow unchecked sediment to leave disturbed areas after a storm event	Little Chehaw and Walnut Crk.
(Bio) Sediment	Urban Runoff	Velocity of urban runoff possibly disturbing latent legacy sediment.	Walnut Creek
(Bio) Sediment	Legacy Sediment	Sediment added to stream in years past still contributing to impairment	Walnut Creek

MANAGEMENT MEASURES, MEASURABLE MILESTONES AND SCHEDULE

(i.e. Local codes and ordinances, Erosion and Sedimentation Control, Storm Water Management, Local water resource monitoring)

The following table lists management measures that have been or will be implemented to achieve water quality standards and the load reductions established in the TMDL. The management measures, including regulatory or voluntary actions or other controls by governments or individuals, specifically apply to the pollutant and the waterbody for which the TMDL was written. A description is provided of how these management measures are/will be accomplished through reliable and effective delivery mechanisms, and how these management measures are/will help achieve the target TMDL. Included is the source of the pollutant, anticipated/past effectiveness of the management measure (very effective, somewhat effective, not effective), the current status (i.e. enforced, in-progress, planning), and measurable milestones and schedule. Milestones are used to measure progress in attaining water quality standards and to determine whether management measures are being implemented.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/Voluntary
Georgia Water Quality Act (OCGA 12-5-20)	Georgia DNR/EPD	Makes it unlawful to discharge excessive pollutants (sediments, nutrients, pesticides, animal waste, etc) into waters of the State in amounts harmful to public health, safety, or welfare, or to animals, birds, or aquatic life or the physical destruction of stream habitats.	1964	In progress	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform Bio (Sediment)	Point and Non-Point Sources (FC), Commercial and Residential Development (Sediment)	Little Chehaw Creek, Rock Creek, Walnut Creek & Ocmulgee River	

Measurable Milestones	Schedule		Comments
	Start	End	
Georgia EPD responsible for enforcement and compliance, for listed sources.	On-going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Georgia Growth Planning Act (OCGA 12-2-8) Part V Environmental Criteria	Georgia DNR, DCA, MGRDC, and local units of government	Authorized Georgia DNR to develop minimum planning standards and procedures that local jurisdictions could adopt and enforce pertaining to the protection of river corridors, mountain tops, water supply, watersheds/reservoirs, groundwater recharge areas, and wetlands. Silvicultural activities may be exempted from permitting requirements provided the activity complies with BMPs.	2005 and 2007 (Part of Unified Planning Work Program)	Proposed	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment) & Fecal Coliform	Commercial and Residential development	Little Chehaw Creek, Rock Creek, Walnut Creek & Ocmulgee River	

Measurable Milestones	Schedule		Comments
	Start	End	
Georgia Forestry Commission can determine applicability and forestry BMP implementation for.	On-going		
Jones County to adopt Part V Criteria at next Comprehensive Plan update	2005		
Bibb County to adopt Part V Criteria at next Comprehensive Plan update.	2007		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Soil/Sedimentation Control Ordinance	Bibb and Jones counties	Developers of land disturbing activities greater than 1.1 acres must submit a SES plan for review by each county and the NRCS.	N/A	In-progress	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Commercial & Residential development	Little Chehaw Creek, Rock Creek, Walnut Creek & Ocmulgee River	

Measurable Milestones	Schedule		Comments
	Start	End	
Jones and Bibb counties review submitted plans and check for compliance, then forwards on to the NRCS for further review. Each county is responsible for providing enforcement and compliance with local ordinance.	On going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Enhanced enforcement with the Rinker Materials Corporation Mine (formerly known as Southern Aggegates)	Georgia Environmental Protection Division	Enhanced enforcement and open communication between EPD, mine, and property owners	2003	Proposed	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Granite Quarry	Rock Creek	

Measurable Milestones	Schedule		Comments
	Start	End	
Enforcement of current permit conditions for Rinker Materials	Ongoing		
Review of current permit conditions for effectiveness	2003		
Decrease allowable sedimentation discharge limits	2003		
Limit quantity of sediment-laden runoff	2003		
Stabilization of stored soil materials by Rinker Corp. under EPD direction	2003		
Limit flow volumes discharged at any one time from site	2003		
Decrease amount of sedimentation allowed in discharges	2003		
Allow additional testing by community of runoff and containment pond discharge at site	2003		
Obtain community input in the development of a sedimentation management plan for the site, including a stabilization and discharge plan	2003		
Assist in identifying sources of funding for this process, including testing for damage to Rock Creek to date, confirming ongoing sedimentation, and developing a plan to address sources.	2003		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Georgia Agricultural Best Management Practices	Agribusinesses and farms	Cattle, swine, chicken and other agricultural businesses follow best management practices to ensure the preservation of clean water. These management practices include measure such as protection of riparian buffers and wetland preservation.		Proposed	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform Sediment (Biota)	Fecal matter from farm animals	Little Chehaw Creek, Rock Creek, Walnut Creek & Ocmulgee River	

Measurable Milestones	Schedule		Comments
	Start	End	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Unpaved Road Maintenance BMPs	Jones County	Jones County to consider adoption of BMPs regarding unpaved road maintenance in immediate proximity of stream crossings	2004	Proposed	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Unpaved roads	Little Chehaw Creek and Walnut Creek	

Measurable Milestones	Schedule		Comments
	Start	End	
County to consider implementation of BMPs as part of normal operating procedures	2004	-	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Establishment of Greenspace Program	Jones County	Establish committee to advise county on targeting general and specific areas to designate as greenspace.	2005	On-going	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio, habitat, sediment, nutrients	Commercial and Residential development	Little Chehaw Creek, Rock Creek, & Walnut Creek	

Measurable Milestones	Schedule		Comments
	Start	End	
County to establish a Greenspace Program Committee tol develop implementation plan and advise County on future purchases of suitable Greenspace property/easements.	Present - 2005	2005	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Clean Water Act/Section 404	EPA/ Army Corps of Engineers	Requires permit to dredge and fill activities in lakes, rivers, and perennial and intermittent streams, wetlands, sloughs, and natural ponds. Requires normal forestry practices to adhere to BMPs and 15 baseline provisions for forest road construction and maintenance and agriculture in order to qualify for the silvaculture exemption from the permitting process.	1972, 1986, 1988	In-progress	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Unpaved Roads	Little Chehaw Creek & Walnut Creek	

Measurable Milestones	Schedule		Comments
	Start	End	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Septic Tank Installation & Review	Jones and Bibb County Health Departments	Reviews location and plans for new septic tank installation to ensure state regulations are met. On-site inspection of new septic tanks to ensure proper installation.	N/A	In progress	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Leaking or sub-standard septic systems	Walnut Creek & Ocmulgee River	

Measurable Milestones	Schedule		Comments
	Start	End	
Plans and recommendations are reviewed on a case-by-case basis. Unresolved complaints are forwarded on to Ga. EPD for enforcement.	On-going		
Bibb County mandates and specifies repairs to faulty systems, and where public sewer is available, connection is available.			

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Capacity, Management, Operations, & Maintenance Program (CMOM)	Macon Water Authority	Comprehensive Assessment of sanitary sewer system	2002	Underway	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Sanitary System Overflows and Leaks	Walnut Creek & Ocmulgee River	

Measurable Milestones	Schedule		Comments
	Start	End	
Conclusion of assessment and submittal to EPD	2003		
Repair and maintenance of existing infrastructure	On-going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Jones County Solid Waste Ordinance	Jones County	Similar to Georgia Water Quality Act, this local ordinance outlaws dumping in the County, with particular respect to streams and waterways	2000	Underway	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Animal viscera dumped in stream	Walnut Creek	

Measurable Milestones	Schedule		Comments
	Start	End	
Jones County to enforce ordinance	On-going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Bibb County Solid Waste Ordinance	Bibb County	Similar to Georgia Water Quality Act, this local ordinance outlaws dumping in the County, with particular respect to streams and waterways, among other provisions.	2002	Underway	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Animal viscera dumped in stream and other illegal dumping	Walnut Creek & Ocmulgee River	

Measurable Milestones	Schedule		Comments
	Start	End	
Bibb County to enforce ordinance	On-going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Review and amending of existing land use ordinances	Jones and Bibb counties, & cities of Macon, Payne City, and Gray	Review of existing land use ordinances to assess relative effectiveness of ordinances at limiting the velocity and negative impacts of urban stormwater runoff.	2004	Proposed	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Urban runoff	Walnut Creek & Ocmulgee River	

Measurable Milestones	Schedule	Comments
Jones County to review ordinances	2004	
Bibb County to review ordinances	2004	
City of Macon to review ordinances	2004	
Payne City to review ordinances	2004	
City of Gray to review ordinances	2004	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/Voluntary
Georgia Erosion and Sedimentation Act	Georgia DNR/EPD State Soil and Water Conservation Commission	Requires permits and plans for land-disturbing activities, plans to allow for control and treatment of any source of sediments and adequate sedimentation control facilities to retain sediment to preclude sedimentation of adjacent waters.	1975	In progress	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Commercial and Residential Development, and Mining (Sediment)	Little Chehaw Creek, Rock Creek & Walnut Creek	

Measurable Milestones	Schedule		Comments
	Start	End	
Legislation calls for the adoption of local procedures governing land-disturbing activities. DNR can adopt procedures if absent locally.	On-going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/Voluntary
NPDES General Permit #GAR000000	Georgia DNR/EPD	Regulates all point source discharges of storm water associated with industrial activity to the waters of the State of Georgia.	1998	In progress	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Point Sources (Mining)	Rock Creek	

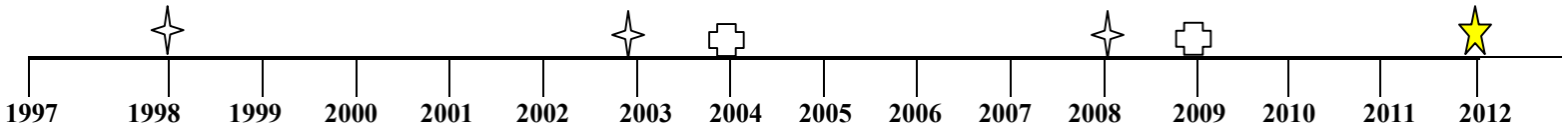
Measurable Milestones	Schedule		Comments
	Start	End	
Storm Water Pollution Prevention Plan required from all facilities.	On-going		

POTENTIAL FUNDING SOURCES The identification and discussion of dedicated funding is important in determining the economic feasibility of the above-mentioned management measures.

Funding Source	Responsible Authority	Status	Anticipated Funding Amount	Impacted Waterbodies*
Jones County General Fund: Funds for testing	Jones County Board of Commissioners	Proposed	$1,500	Walnut Creek
Georgia Quality Growth Program	Georgia Dept. of Community Affairs	Proposed	$25,000	Little Chehaw, Rock, and Walnut Creek
US EPA Section 604(b) grant funds	Georgia DNR/Middle Georgia RDC	Proposed	$5,000	Uncertain
US EPA Watershed Surveys and Planning Program	US Environmental Protection Agency	Proposed	??	Little Chehaw Creek, Rock Creek, Walnut Creek & Ocmulgee River

PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from acceptance of the TMDL Implementation Plan by EPD.



EPD Monitoring
Evaluate TMDL & Attainment Date
Project Attainment

MONITORING PLAN

The purpose of this monitoring plan is to determine the effectiveness of the target TMDL and the management measures being implemented to meet water quality standards. List of previous, current or planned/proposed sampling activities or other surveys. (Monitoring data that placed stream on 303(d) list will be provided if requested.)

Name Of Regulation / Ordinance Or Management Measure	Organization	Impacted Waterbodies*	Pollutants	Purpose/Description	Time Frame		Status (Previous, Current, Proposed)
					Start	End	
Additional Sampling	Jones County Board of Commissioners	Walnut Creek	Fecal Coliform	Jones County has agreed to sample the stream at different locations along the segment using EPD's testing protocol in an attempt to better define the problem.	2003	2003	Proposed
Additional Sampling	Macon Water Authority	Walnut Creek & Ocmulgee River	Fecal Coliform	The Macon Water Authority has agreed to sample the streams at different locations along the segments using EPD's testing protocol in an attempt to better define the problem.	2003	2003	Current
Additional Sampling	EPD "Stream Team"	Ocmulgee River Basin	Fecal Coliform, Sediment	Stream Team will return to Ocmulgee Basin to perform additional testing	2004	2004	Proposed

Walnut Creek/Stone Creek Watershed
0307010316

CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEING MADE

The following set of criteria will be used to determine whether any substantial progress is being made towards reducing pollutants in impaired waterbodies and attaining water quality standards. Discussion on each criteria is recorded in the space provided. Additional relevant criteria are presented in comments.

Percent of concentration or load change (monitoring program)

If monitoring results show that it is unlikely that the TMDL will be adequate to meet water quality standards, revision of the TMDL may be necessary.

- Categorical change in classification of the stream (delisting the stream is the goal)

- Regulatory controls or activities installed (ordinances, laws) Both Jones and Bibb counties will be adopting the Georgia Growth Planning Act Part. V Environmental Ordinances in 2005-2007 may add more "teeth" to existing ordinances and laws. Continued enforcement of SES, Solid Waste, and Septic Tank ordinances by both Bibb and Jones counties. EPD to review and enhance enforcement of Rinker Materials Corporation permit and practices with regards to sedimentation.

- Best management practices installed (agricultural, forestry, urban) Jones County will consider the adoption of the *Recommended Practices Manual: A Guideline for Maintenance and Service of Unpaved Roads* in the immediate vicinity of creek crossings. Cooperation of larger farming interest should be pursued with respect to Georgia Agricultural Best Management Practices.

COMMENTS (From Committee)

Members of the stakeholder committee also shared concerns over existing fish consumption advisories governing mercury and PCBs in the Ocmulgee River. Committee members cited Georgia Power as one of the largest emitters of mercury in the United States. Committee members were concerned with public health and that a more proactive effort on behalf of the state or local government should be made to make subsistence fishermen aware of the dangers of consuming fish from the river. Committee members stated the desire for EPD to perform additional testing for metals in area streams.

Walnut Creek/Stone Creek Watershed
0307010316

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Environmental Protection Division of the Department of Natural Resources, State of Georgia.

Appendix:
Walnut Creek / Stone Creek Watershed
Revised TMDL Implementation Plan

Attachments:

- Map of Walnut Creek / Stone Creek Watershed, with impacted streams identified
- Agenda and minutes from February 25, 2003 Committee meeting
- Sign-in sheet from February 25, 2003 Committee meeting
- Agenda and minutes from March 17, 2003 Committee meeting
- Copy of Press Release sent out to area papers
- Sign-in sheet from March 17, 2003 Committee meeting
- Agenda and minutes from April 21, 2003 Committee meeting
- Sign-in sheet from April 21, 2003 Committee meeting
- Article from April 24, 2003 *Macon Telegraph*
- Map of affected Little Chehaw Creek, Rock Creek, and Walnut Creek segments
- Map of affected Ocmulgee River segment